Peggy User Guide

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Peggy User Guide

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Chapter 1:

General Information

Chapter Overview

- Welcome
- Simple Western Assays on Peggy
- Safety
- Customer Service and Technical Support
- Legal Notices

Welcome

Congratulations on bringing Peggy™ into your lab! ProteinSimple welcomes you as a new user. This user guide will cover important safety and instrument information, installation requirements, maintenance and operating instructions.

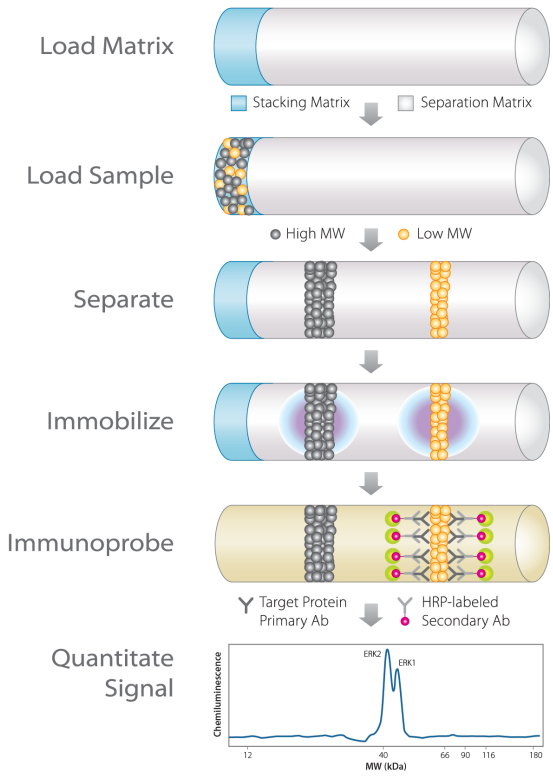
Simple Western Assays on Peggy

Peggy performs Simple Western assays two ways, letting you separate proteins either by size or by charge. Whatever you decide, all you have to do is load your samples in Peggy and press start.

Simple Westerns take place in a capillary. Peggy automates all steps of the process for you including sample loading, protein separation, immunoprobing, washing, detection and data analysis. Up to 12 samples can be analyzed simultaneously in a single cycle and up to 8 cycles (96 samples) can be processed in a single run.

Size-Based Assays

A Simple Western size assay is an automated Western - no gels, no transfer devices, no blots, no film and no manual analysis.

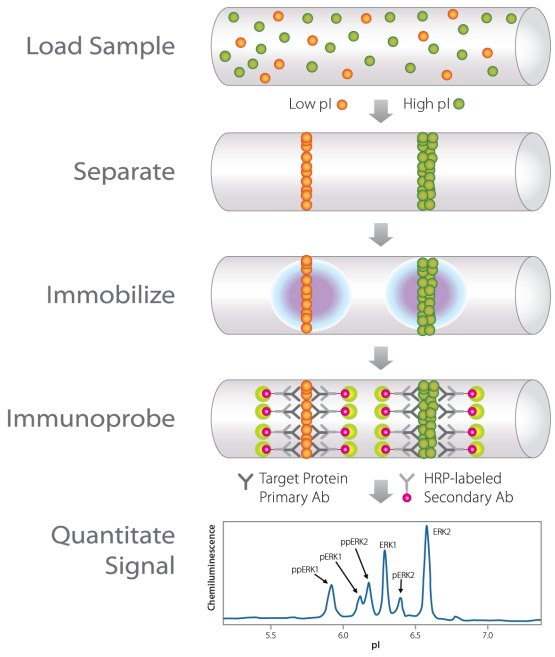


Samples are first treated with SDS and DTT, and then heat denatured. Assay reagents and prepared samples are loaded into an assay plate and placed in Peggy.

Peggy loads samples into the capillary automatically. Proteins are separated by size as they migrate through both a stacking and separation matrix. The separated proteins are then immobilized to the capillary wall via a proprietary UV capture method. Target proteins are immunoprobed using a primary antibody and detected using an HRP-conjugated secondary antibody and chemiluminescent substrate. The resulting chemiluminescent signal is detected and quantitated. Analysis is automatically performed and quantitative results, including molecular weight and signal intensity, are presented in Compass software.

Charge-Based Assays

Simple Western charge assays let you do in-depth characterization of proteins. Because proteins are separated by their charge or pI, extremely small isoelectric point differences are detected - letting you see discreet changes in protein isoforms.



Native protein lysate samples and assay reagents are prepared, loaded into an assay plate and placed in Peggy.

Peggy loads samples into the capillary automatically. Proteins and ampholytes migrate through a separation matrix, are separated by charge and resolve according to their expected pI values. The separated proteins are then immobilized to the capillary wall via a proprietary UV capture method. Target proteins are immunoprobed using a primary antibody and detected using an HRP-conjugated secondary antibody and chemiluminescent substrate. The resulting chemiluminescent signal is detected and quantitated. Analysis is automatically performed and quantitative results, including pI value and signal intensity, are presented in Compass software.

Safety

User Attention Notifications

Several user attention phrases are used throughout this manual. Each phrase should draw the following level of attention from the user:

NOTE	Points out useful information.
IMPORTANT	Indicates information necessary for proper instrument operation.
CAUTION	Cautions users regarding potentially hazardous situations in regard to user injury or damage to the instrument if the information is not heeded.
!WARNING!	Warns users that serious physical injury can result if warning precautions are not heeded.

Chemical Hazards

!WARNING! CHEMICAL HAZARD

Some chemicals used can be potentially hazardous, and can cause injury or illness.

- Read and understand the Material Safety Data Sheets (MSDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials.
- Minimize contact with and inhalation of chemicals. Wear appropriate personal protective equipment when handling chemicals (e.g., safety glasses, gloves, or clothing). For additional safety guidelines, consult the MSDS.
- Do not leave chemical containers open.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended on the MSDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

Chemical Waste Hazards

!WARNING! BIOHAZARD

Samples and waste bottle contents should be handled by procedures recommended in the CDC/NIH manual: Biosafety in Microbiological and Biomedical Laboratories (BMBL). The manual is available from the U.S. Government Printing Office or online at http://www.cdc.gov/biosafety/publications/bmbl5/.

Depending on the samples used, waste bottle contents may constitute a biohazard. Use precaution when emptying the waste bottle. Dispose of waste bottle contents in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

- Read and understand the Material Safety Data Sheets (MSDSs) provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Minimize contact with chemical waste. Wear appropriate personal protective equipment when handling chemicals (e.g., safety glasses, gloves, or clothing).
- Use precaution when emptying the waste bottle.
- Dispose of waste bottle contents in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

Waste Production and Disposal

It is the responsibility of the user to properly dispose of waste. The aqueous bulk waste stream is approximately pH 8. For reference, ProteinSimple disposes of waste under the non-RCRA Hazardous Waste Liquid code 141 (buffer containing sodium chloride surfactants). A typical waste profile for one cycle (12 capillaries) is as follows:

NOTE: Volumes should be adjusted accordingly to account for running of additional cycles.

Waste Origin: Size-based Assays	Volume
Trough Reagents for 1 cycle	
Matrix Removal Buffer	2.0 mL
Wash Buffer	2.0 mL
Running Buffer	1.6 mL
Water (for trough and manifold cleaning)	80.0 mL
Total waste per cycle	**85.6 mL**
Assay Plate Reagents*	
Separation Matrix	0.240 mL
Stacking Matrix	0.240 mL
Biotinylated Ladder	0.005 mL
Antibody Diluent	0.200 mL
Primary Antibodies in Antibody Diluent	0.180 mL
Streptavidin-HRP	0.010 mL
Secondary HRP Conjugate	0.180 mL
Luminol/Peroxide Mix	0.180 mL
Prepared Sample – contains Sample Buffer, DTT, Fluorescent Standards and Water	0.055 mL

**Assumes 1 row of sample and 1 row of antibody.*

Waste Origin: Charge-based Assays	Volume
Trough Reagents for 1 cycle	
Anolyte (10 mM)	1.0 mL
Catholyte (100 mM)	1.0 mL
Wash Buffer	3.0 mL
Water (for trough and manifold cleaning)	80.0 mL
Total waste per cycle	**85.0 mL**
Assay Plate Reagents*	
Luminol/Peroxide Solution	0.025 mL
Antibodies in Antibody Diluent	0.075 mL
Example Cell Lysate Sample Cell lysate Sample Diluent Premix Protease inhibitors Phosphatase inhibitors Labeled peptides	 0.036 mL

**Assumes 1 row of sample and 1 row of antibody.*

Material Safety Data Sheets

Some chemicals used with Peggy may be listed as hazardous. Warnings are displayed on the labels of all chemicals when hazards exist.

MSDSs provide users with safety information needed to store, handle, transport and dispose of the chemicals safely. ProteinSimple recommends updating laboratory MSDS records periodically.

Material Safety Data Sheets for ProteinSimple reagents are available online at www.proteinsimple.com/literature or by calling (888) 607-9692. Otherwise, call the chemical manufacturer directly or visit their web site.

Instrument Safety Labels

The following safety labels are located on Peggy. Each label will display a safety alert symbol indicating a potential safety hazard.

Symbol	Description
	Risk of Electric Shock.
	Refer to Peggy User Guide before proceeding.
	Danger of hazardous waste. Use caution in these areas. This warning only applies if using hazardous material. Peggy reagents are not considered hazardous waste. If you are using hazardous materials, please contact your field service representative to place labels in the appropriate locations.

!WARNING!
If the unit is not used as specified by ProteinSimple, the overall safety will be impaired.

!WARNING!
If the unit is damaged and does not function properly, stop the unit safely and contact ProteinSimple Technical Support immediately.

!WARNING!
No user replaceable/serviceable parts except for the ionizer fan and separation block.

Sharps Hazard

!WARNING! SHARPS HAZARD

Capillaries may present a potential sharps hazard. Dispose of used capillaries in biomedical waste sharps containers.

Pinch Hazard

!WARNING! PINCH HAZARD

Do not remove the transparent front window on Peggy unless instructed to do so by ProteinSimple Technical Support personnel. The window protects users from a potential pinch hazard that could be caused by the moving robot and gripper assembly.

Door Interlock

A door interlock is engaged when a run is started to prevent users from opening the doors during a run. This eliminates any dangerous user interactions with the robot as well as exposure to high voltage and UV light. A yellow indicator light indicates when the instrument is running and the interlock is engaged.

When the system status is **READY** and the doors are open, the robot's XZ stage motors, high-voltage power supply and UV power supply are disabled.

!WARNING!

Do not override the door interlock. The interlock protects users from exposure to UV light and a potential pinch hazard that could be caused by the moving system tray.

System Tray

CAUTION

Do not attempt to open or close the tray manually. Instead, use the **Open Tray** command from the **Instrument** menu in Compass software.

Prior to System Operation

Ensure that all users of Peggy have:

- Received instruction in general safety practices for laboratories.
- Received instruction in specific safety practices for the instrument.
- Received instruction on handling of biohazards if biohazardous materials are to be used on the system.
- Read and understood all related MSDSs.

CAUTION

Avoid using Peggy in a manner not specified by ProteinSimple. While the system has been designed to protect the user, this protection may be impaired if the instrument is used improperly.

Customer Service and Technical Support

Telephone
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Legal Notices

NOTE: Read the Legal Notices carefully before using Peggy.

Peggy Disclaimer of Warranty

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3.1 **Services.** Subject to Customer's payment of the Services fees, as set forth in the System Quotation, and to the terms and conditions herein, Company will use commercially reasonable efforts to provide to Customer the following support and maintenance services (the "Services") for the Licensed Software: (a) Company will answer technical questions concerning functions and features of the Licensed Software; (b) Company will provide Error verification, analysis and corrective efforts for the Licensed Software; and (c) Company will provide, without charge, Updates of the software released during the term of this Agreement. Customer will be responsible for providing, in a manner consistent with good industry practice, all Services to Users. Customer acknowledges that Company may not be able to correct all reported Errors. Any Update of the Licensed Software will be deemed part of the Licensed Software and Customer will use such Updates in accordance with the requirements and obligations in this Agreement.

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6.3 **Effect of Termination.** Upon termination of this Agreement (or termination or expiration of any license granted hereunder), all rights of Customer to use the Licensed Software and Documentation will cease and (a) all license rights granted under this Agreement will immediately terminate and Customer shall promptly stop all use of the Licensed Software and Documentation; (b) all Services will terminate immediately; (c) Customer shall promptly erase all copies of the Licensed Software from Customer's computers, and destroy all copies of the Licensed Software and Documentation on tangible media in Customer's possession or control or return such copies to Company; and (d) upon request by Company, Customer shall certify in writing to Company that it has returned or destroyed such Licensed Software and Documentation. The parties' rights and obligations under Sections 1 (Definitions), 2.4 (Ownership), 4.3 (Disclaimer), 5 (Limitation of Liability), 6 (Term and Termination), and 7 (General) shall survive termination of this Agreement.

7. **General**

7.1 **Assignment.** This Agreement and Customer's rights hereunder may not be assigned to any third party by Customer except with the prior written approval of Company. Any attempted assignment of this Agreement or any rights or obligations hereunder will be null and void.

7.2 **Governing Law.** This Agreement is made in, governed by, and shall be construed in accordance with the laws of the State of California, without regard to any conflicts of law principles that would result in application of laws of any other jurisdiction. The United Nations Convention on Contracts for the International Sale of Goods does not apply to this contract. Any legal action or other legal proceeding relating to this contract or the enforcement of any provision of this contract must be brought in any state or federal court located in Santa Clara County, California. Customer and Company expressly and irrevocably consents and submits to the jurisdiction of such courts.

7.3 **Injunctive Relief.** Customer acknowledges that the Licensed Software contains valuable trade secrets and proprietary information of Company, that any actual or threatened breach of this Agreement will cause harm to Company for which monetary damages would be an inadequate remedy, and that injunctive relief is an appropriate remedy for such breach.

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7.5 **Severability.** In the event any provision of this Agreement is held to be invalid or unenforceable, the remaining provisions of this Agreement will remain in full force.

7.6 **Waiver.** The waiver by either party of any default or breach of this Agreement shall not constitute a waiver of any other or subsequent default or breach.

7.7 **Export.** Customer agrees not to export, reexport, or transfer, directly or indirectly, any U.S. technical data acquired from Company, or any products utilizing such data, in violation of the United States export laws or regulations.

7.8 **Force Majeure.** Company shall not be liable, directly or indirectly, for any delay or failure in performance of any obligation under this Agreement, including any delivery obligation, where such delay or failure arises or results from a cause beyond Company's reasonable control, or beyond the reasonable control of Company's suppliers or contractors, including, but not limited to strike, boycott or other labor disputes, embargo, governmental regulation, inability or delay in obtaining materials, acts of God, war, earthquake, fire, or flood. In the event of such force majeure, the time for delivery or other performance will be extended for a period equal to the duration of the delay caused thereby, provided that Company notifies Customer of the nature and duration of such force majeure event.

7.9 **Entire Agreement; Notice.** This Agreement constitutes the complete agreement between the parties and supersedes all prior or contemporaneous agreements or representations, written or oral, concerning the subject matter of this Agreement. Except as otherwise expressly provided in this Agreement, any modifications of this Agreement must be in writing and agreed to by both parties. Company may provide any notice to Customer by e-mail. Customer may provide notice to Company by sending an e-mail to info@proteinsimple.com or a letter by United States mail to ProteinSimple, 3040 Oakmead Village Drive, Santa Clara, CA 95051, or to such other address as Company may specify in writing by posting the new address on the Company website.

7.10 **Relationship of the Parties.** The parties are acting hereunder as independent contractors and not as partners, agents, fiduciaries, or joint venturers. Neither party has the power or authority represent, act for, bind, or otherwise create or assume any obligation on behalf of the other party.

Chapter 2:

Lab Requirements

Chapter Overview

- Introduction
- Space Requirements
- Electrical Requirements
- Environmental Requirements
- Software and Computer Requirements
- General Guidelines and Information

Introduction

This chapter will help you prepare the lab for Peggy. Please complete the space, electrical, vacuum and environmental requirements prior to scheduling your installation.

NOTE: Please wait for an authorized ProteinSimple representative to unpack and install Peggy. Do not attempt to do this as improper handling of the instrument and computer can result in personal injury or damage to the system.

Space Requirements

Please provide adequate space to accommodate the system and computer, with sufficient clearance for heat ventilation and service accessibility. Peggy is a bench-top unit that requires a sturdy lab bench or table that can support 200 lbs (91 kg).

IMPORTANT

Peggy must be on a stable surface and level at all times for proper operation. Ensure the lab bench or table does not shift or wobble under heavy weight. Additionally, anti-vibration tables may not be used as they can alter the instrument level during operation.

System dimensions are as follows:

Dimension	Meters	Feet
Peggy		
Width	0.94	3.08
Width with doors open	1.27	4.17
Depth	0.61	2.00
Height	0.84	2.76
Auxiliary Module		
Width	0.33	1.08
Depth	0.30	1.00
Height	0.51	1.67
Tubing between Auxiliary Module and Instrument	3.00	9.84
Computer Workstation		
Width	0.66	2.17
Depth	0.76	2.49
Height	0.41	1.35

Table 2-1: *Peggy dimensions.*

Dimension	Meters	Feet
Width	2.13	6.98
Depth	0.91	2.99
Height	1.00	3.28

Table 2-2: *Recommended space requirements for Peggy.*

Electrical Requirements

Peggy requires a dedicated, grounded circuit capable of delivering the appropriate current and voltage for your country. The power requirements for select countries are listed below:

Region	Volts (AC)	Frequency (Hz)	Amps
US and Canada	120	60	5.5
Europe	240	50	2.7
Japan	100	50/60	6.5

Table 2-3: *Power requirements.*

In addition to the requirements listed above, ProteinSimple requires the grounded circuits terminate at the receptacles, and receptacles must be located within 10 ft (3 m) of the instrument.

Environmental Requirements

Please provide appropriate heating and cooling to maintain a constant laboratory temperature. For optimal performance, the lab environment must meet the following criteria:

Requirement	Specification
Operating temperature range	18 - 24 °C (64 - 75 °F)
Operating humidity range	20-60% relative, non-condensing

Table 2-4: *Environmental requirements.*

Software and Computer Requirements

Peggy includes a computer to run the instrument and analyze resulting data using Compass software. The software is preinstalled. A CD containing Compass software is also provided with Peggy. For post-run data analysis, Compass software can also be installed on a separate workstation, such as a user's desktop computer. This computer must meet the minimum requirements listed in the table below in order to run Compass software and process data.

Component	Minimum Recommended
Operating System	Windows XP, Windows 7 or Vista
Processor	Core 2 Duo
Memory	2 GB
Free Disk Space	10 GB

Table 2-5: *Computer requirements.*

General Guidelines and Information

System Operation: Notification of Intended Use

NOTE: Peggy is for research use only. Not for use in diagnostic procedures.

Lifting and Moving the System: Use Proper Lifting Precautions

IMPORTANT

Use caution when lifting or moving Peggy. The system weight is 82 kg (180 lbs). Two or more people are required to lift the system onto the laboratory bench. Proper lifting safety precautions must be taken.

Chapter 3:

Peggy

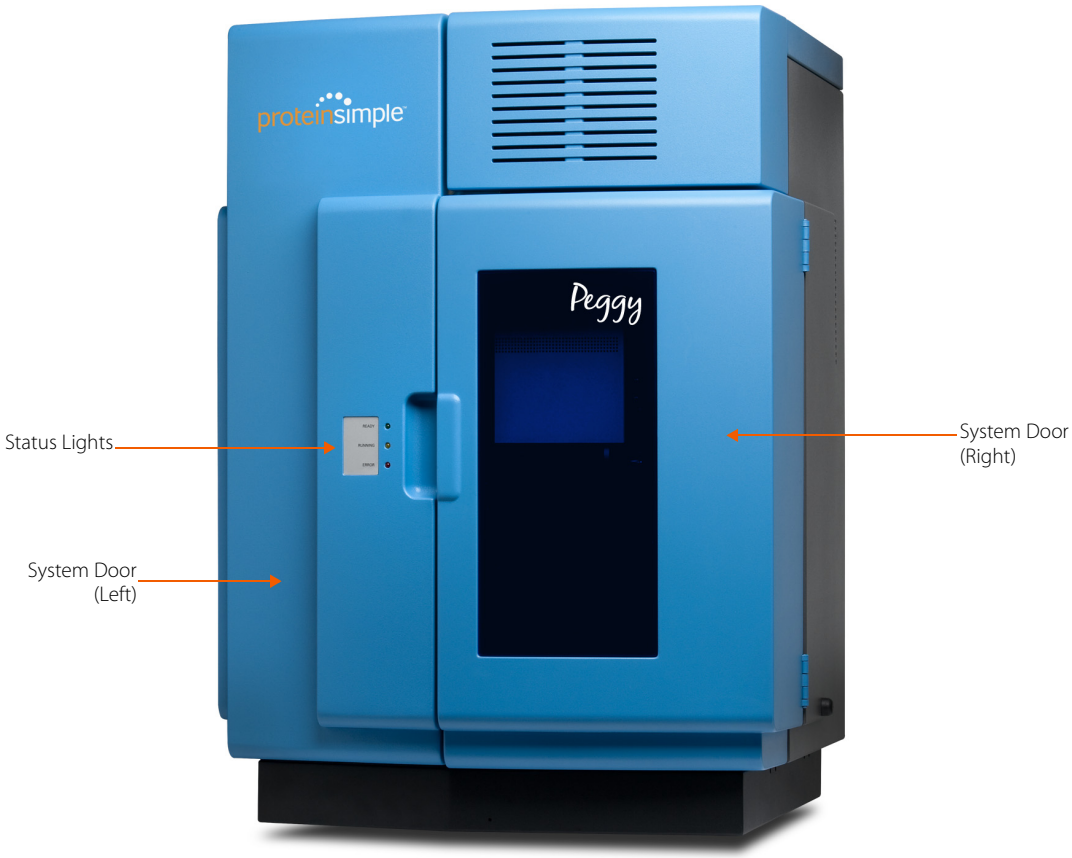
Chapter Overview

- Instrument Overview
- Auxiliary Module
- Compliance
- Safety Guidelines
- Physical Specifications

Instrument Overview

Peggy's individual hardware components are described in this section. All steps of the assay are performed in a single capillary for each sample and the system is capable of running up to 96 samples per experiment.

External Components



!WARNING!

There are no user replaceable/serviceable parts except for the ionizer fan.

System Doors

Peggy's doors provide access to the inside of the instrument for the loading of samples, reagents and capillaries. To open the doors, first confirm that the green **System Status Ready Indicator** is illuminated. Using the handle located to the right of the **System Status Indicators**, pull the right door open first. Open the left door by pulling forward on the top and bottom latches. To close the doors, close the left door first and engage both latches, then close the right door. The right door secures with a magnet.

NOTE: Peggy's doors must be closed before starting a run or cleaning protocol.

Door Interlock

A door interlock is engaged when a run is started to prevent users from opening the doors during a run. This eliminates any dangerous user interactions with the robot as well as exposure to high voltage and UV light. A yellow indicator light indicates when the instrument is running and the interlock is engaged.

When system status is ready and the cover is open, the robot's system tray, Z-stage motors and UV power supply are disabled.

!WARNING!

Do not override the cover interlock. The interlock protects users from exposure to UV light and a potential pinch hazard that could be caused by the moving system trays.

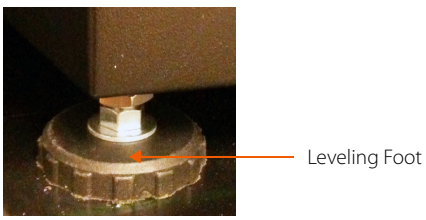
Status Lights

Three LEDs are located on Peggy's front panel to indicate system status:

- **Ready (Green)**: Indicates Peggy is powered on and ready for use.
- **Running (Yellow)**: Indicates a run or a cleaning protocol is in progress.
- **Error (Red)**: Indicates an error has been detected. Error information will be presented in the Status window of the Run Summary Screen in Compass software.

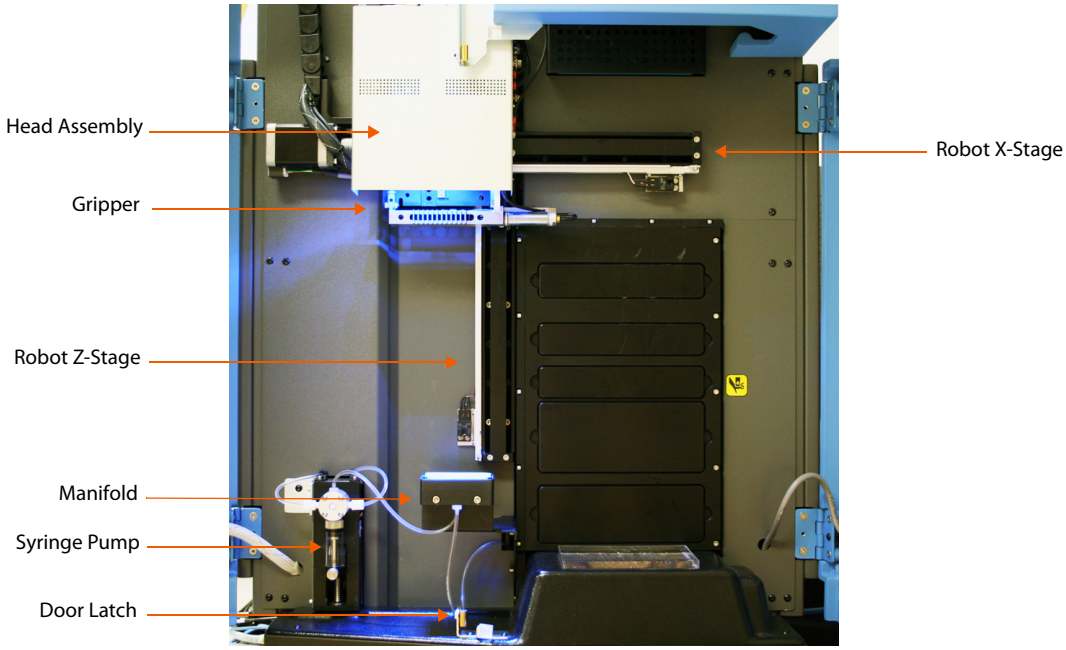
Leveling Feet

Four leveling feet are located at the base of the instrument. The instrument must be level for proper operation. During installation, adjustments to obtain proper instrument level will be made by the ProteinSimple representative, and this will be checked during preventive maintenance visits. The level status of the instrument is monitored internally and reported to the user through a Compass software interface.



NOTE: If Peggy must be moved from the original install location or requires leveling for any reason, please see "Leveling the Instrument" on page 74 for leveling procedures or contact ProteinSimple Technical Support.

Internal Components



Head Assembly

Fluidic components in the head assembly execute all bulk reagent dispensing and sample tray reagent loading steps. Pneumatic components provide control for the gripper, which is used to pick up and transfer capillaries.

Gripper

The gripper is located at the base of the head assembly, and is used to transfer capillaries between system trays. The gripper will pick up the 12 capillaries from the capillary clip and move them to and from each area in the tray during a cycle within a run. The gripper rotates 90 degrees to allow vertical transfer and horizontal placement of capillaries.

X-Z Stage Robot

The X-Z stage robot moves the head assembly to and from the sample, resource, incubator, separation and capillary discard trays during run execution. The robot also moves the pipettor, which is used to transfer fluids and perform washes within the instrument.

Syringe Pump

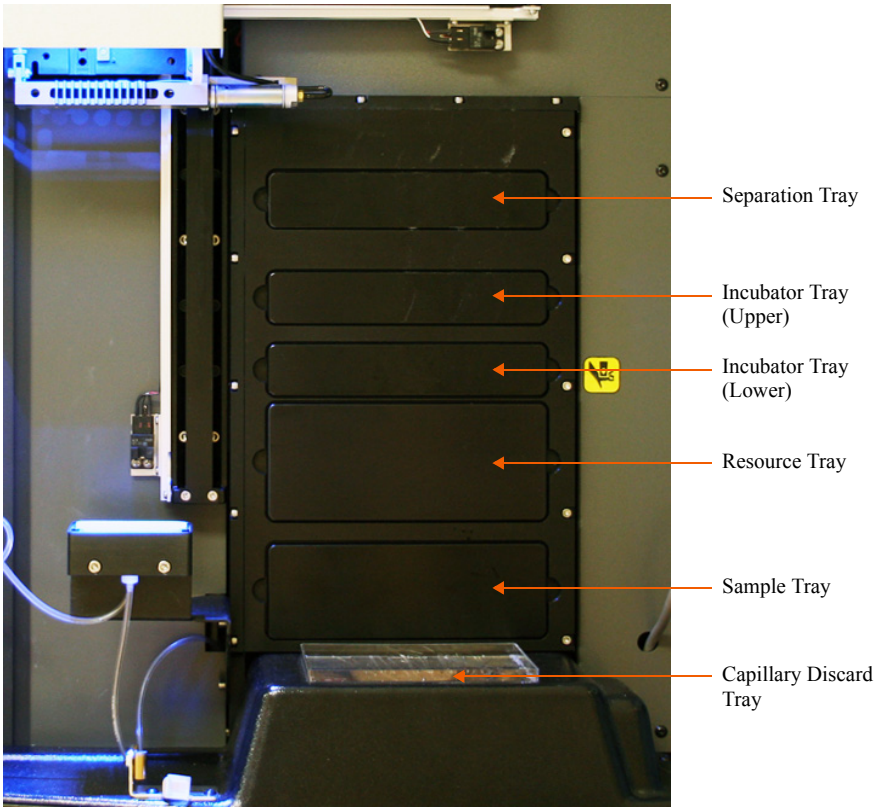
The syringe pump is used to pipette DI water, reagents in the resource tray cups, and also assists in washing the manifold head as dictated by the assay protocol.

Ionizer Fans

Anti-static ionizer fans are mounted on the inside of Peggy's right door. These fans are used to circulate ionized air inside the system. This provides a uniform static charge that aids in proper capillary transfer during run execution.

System Trays

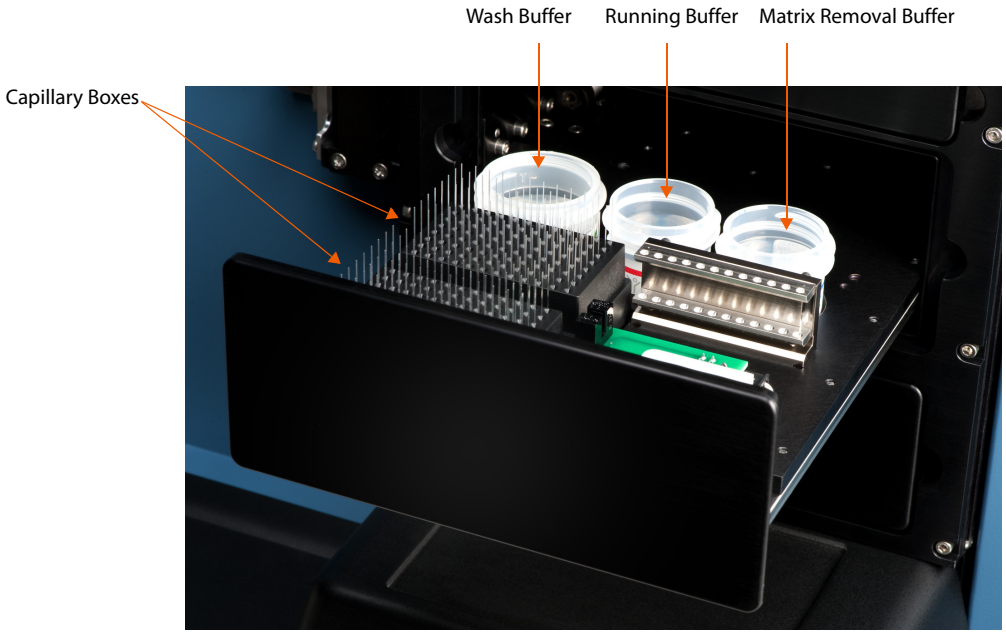
Peggy utilizes five compartmental trays for capillary and reagent storage and to carry out specific phases of the assay. All trays can be opened and closed by selecting the **Open Trays** option from the **Instrument** menu in Compass software. For more details, please refer to the "Opening Trays" on page 64.



Resource Tray

Size-based Assays

For size assays, the resource tray houses the Running Buffer, Wash Buffer, Matrix Removal Buffer, and up to two capillary boxes.



Reagents should be inserted into resource tray reagent holders as follows: Wash Buffer (left), Running Buffer (middle), Matrix Removal Buffer (right). When using only one box of capillaries, it should be placed in the primary box location closest to the reagents.

NOTE: You an also refer to the labels on the resource tray for proper insertion of reagents.

Charge-based Assays

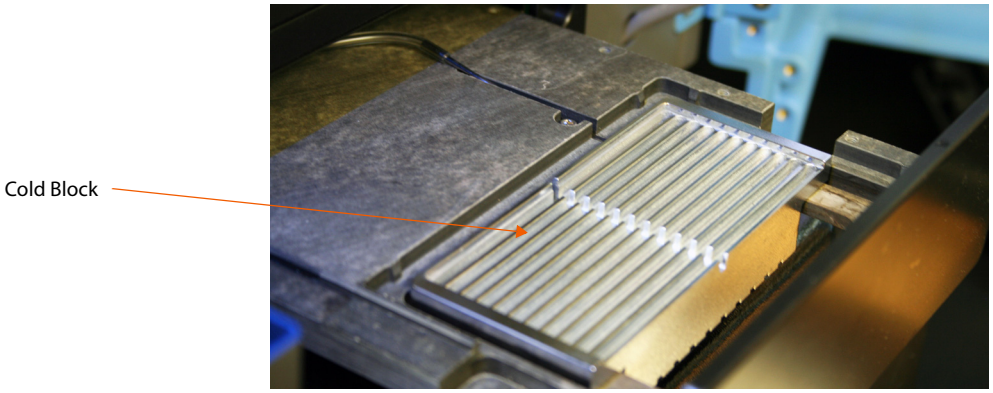
For charge assays, the resource tray houses the Wash Buffer, Anolyte, Catholyte and up to two capillary boxes.

Reagents should be inserted into resource tray reagent holders as follows: Wash Buffer (left), Anolyte (middle), Catholyte (right). When using only one box of capillaries, it should be placed in the primary box location closest to the reagents.

NOTE: You an also refer to the labels on the resource tray for proper insertion of reagents.

Sample Tray

The sample tray houses the 384-well plate which contains samples and assay reagents. A cold block controls the temperature to 10 °C over a portion of the sample plate while the remaining portion of the sample plate remains at ambient instrument temperature.



Sample plates should be lidded and inserted into the sample tray so that the A1 well position is aligned with the upper left corner of the cold block.

NOTES:
*Peggy requires that plate lids be used on sample plates. If a lid is not detected, a message will be displayed in the **Start Run Wizard**. Compass software will reopen the sample tray to allow the user to insert a lid.*

When inserting the sample plate, ensure that the plate is firmly seated and level on the cold block. Plates that are not level can interfere with the movement of the sample tray.

Incubation Trays

Two incubator trays are used when Peggy is executing the incubation steps of an assay protocol. Each tray can house up to 48 capillaries.

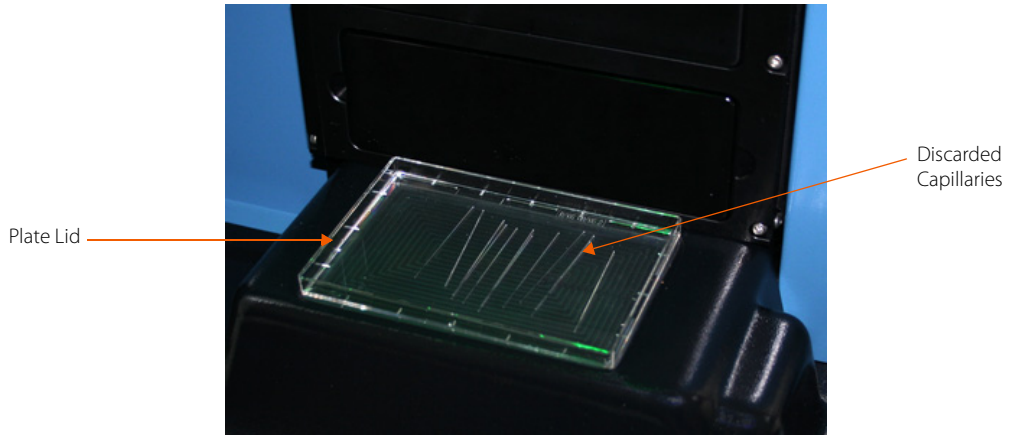
Separation Tray

The separation tray is used for the separation and detection steps of the assay protocol. The separation block contains two troughs which will be automatically filled with buffer(s) by the instrument. Peggy will also remove buffer(s) and wash the troughs after completion of the separation step. Chemiluminescent and fluorescent CCD images are taken of the separation in the capillaries through the detection window. The tray holds 12 capillaries.

- Size-based assays - both the front and rear troughs are used for Running Buffer
- Charge-based assays - the front trough is used for Anolyte and the rear trough for Catholyte

Capillary Discard Tray

The capillary discard tray is used to dispose of capillaries as the execution of each cycle completes. ProteinSimple recommends placing an inverted plate lid in the tray area to contain capillaries, as well as emptying the lid on a daily basis.



!WARNING! SHARPS HAZARD

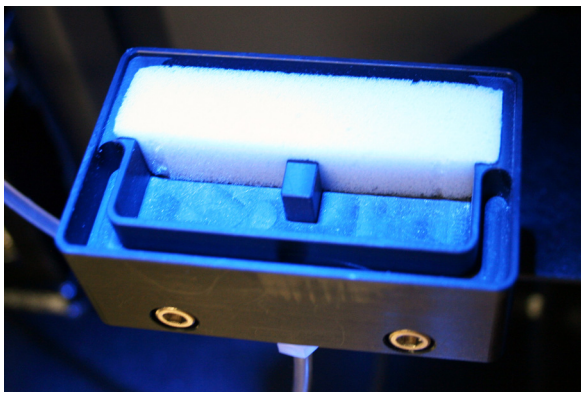
Capillaries may present a potential sharps hazard. Dispose of used capillaries in biomedical waste sharps containers.

NOTE: An overfilled capillary discard tray may cause jamming of the sample tray. If this occurs, call technical support at (888) 607-9692 or (408) 510-5500, option 3.

Manifold Wash Station

The manifold wash station is used to wash and clean the instrument manifold after each separation and to prevent build-up of viscous material in the head.

NOTE: A fresh manifold sponge should be replaced after each run or when setting up a new assay plate and experiment.



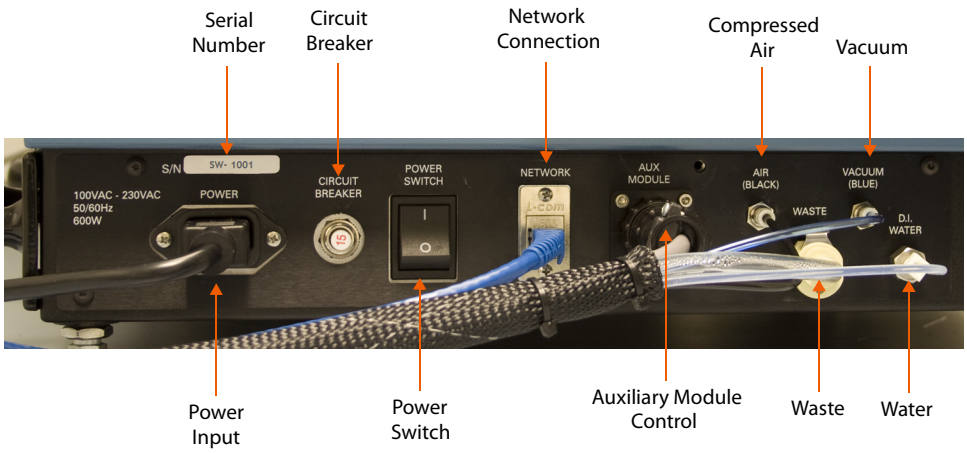
User Vacuum

A user vacuum line is located on the inside left panel of the instrument. This vacuum is used for instrument cleaning procedures and can also be used to clean liquid spills when needed. The vacuum turns on whenever Peggy's doors and a system tray are open at the same time.

To use the vacuum, turn the valve to the **on** position. Turn the valve to the **off** position when not in use.

Peggy Instrument - Left Panel

Located on the lower left side of Peggy is her serial number, power entry, power switch and connector panel.



- **System Serial Number**: This label contains the serial number for Peggy.
- **System Power** - The main system power components consist of the power switch and power input.

!WARNING!
Only use the power supply cord provided with Peggy. If the cord is damaged, please contact ProteinSimple Technical Support.

!WARNING!
No user replaceable parts.

!WARNING! SHOCK HAZARD
Disconnect the power cord from the instrument power input to disconnect power to the instrument.

- **Network Connection** - A 10/100/BASE-T Ethernet (RJ-45 connector) is used to connect Peggy to a computer or local network.

NOTE: Serial numbers are used to identify individual instruments on the network.

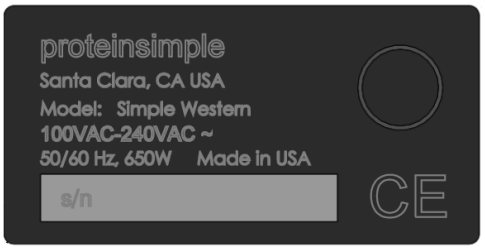
Auxiliary Module Connections

- **Module Control**: This connection allows communication between Peggy and the auxiliary module.
- **Compressed Air**: Compressed air from the auxiliary module is used to power pneumatic actuations in Peggy. The compressed air line is black.
- **Waste**: Waste produced by Peggy is emptied into the waste reservoir in the auxiliary module. This line is under vacuum when waste aspirations are being performed.
- **Vacuum**: Vacuum is provided to Peggy by the auxiliary module and is used in pick and place operations within the instrument.
- **Water**: This connection provides water to Peggy from the auxiliary module.

Peggy Instrument - Rear Panel

System Label

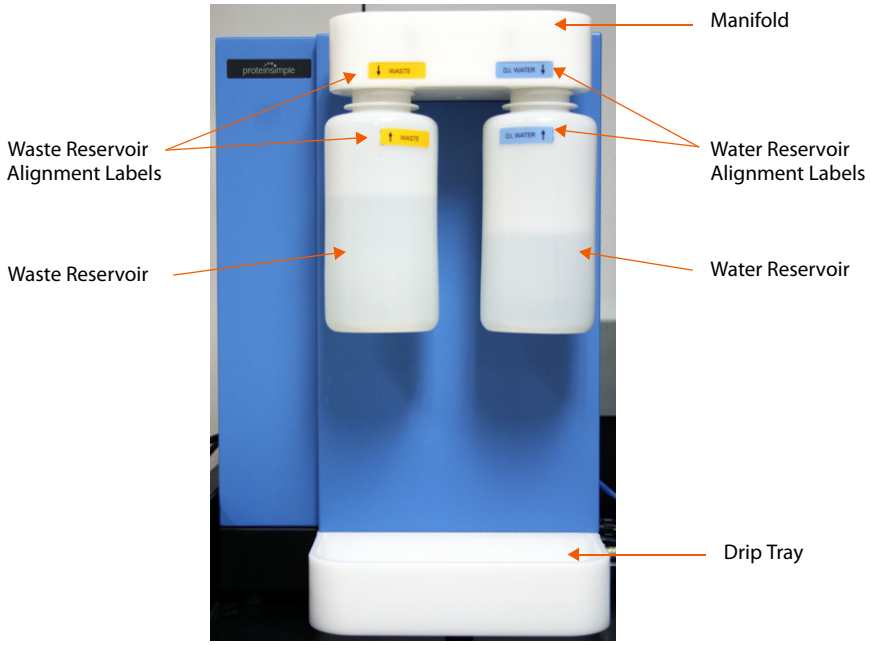
A system label is located on the rear panel of Peggy. It includes the following information: the ProteinSimple location, system model, power requirements, serial number and certification markings. The serial number of the instrument can also be found on the lower, left side panel above the power entry.



Auxiliary Module

The auxiliary module houses the water and waste bottles used by Peggy. For identification purposes, the waste bottle is labeled in yellow and the water bottle is labeled in blue. The volume in each reservoir is 1.0 L.

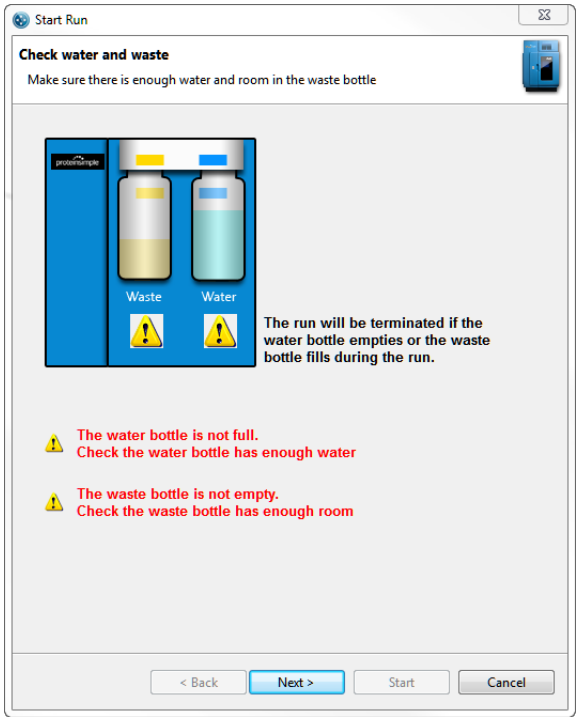
Deionized water is used by Peggy to clean the troughs in the separation tray and the fluidics in the head assembly. The waste bottle collects waste generated by Peggy during run execution. For more information on Peggy waste production, please refer to the "Waste Production and Disposal" on page 6.



There are two liquid level sensors in each bottle. The sensor located in the bottom of the bottle indicates when the bottle is empty. The sensor located in the top of the bottle indicates that sufficient volume is available to complete an eight cycle assay with the instrument.

NOTE: ProteinSimple recommends that users check bottle levels prior to starting a run to ensure the assay will run to completion. Fill the water bottle up to the base of the bottle's neck before starting a run. If the waste bottle becomes full or the water bottle becomes empty when a run is executing, the run will be aborted.

The **Start Run Wizard** in Compass software will also perform a level check. When a full or empty status is detected, the software will present this error condition in Page 1 of the **Start Run Wizard**:


Start Run
Check water and waste
Make sure there is enough water and room in the waste bottle
Waste
Water
The run will be terminated if the water bottle empties or the waste bottle fills during the run.
The water bottle is not full.
Check the water bottle has enough water
The waste bottle is not empty.
Check the waste bottle has enough room
< Back
Next >
Start
Cancel

If this occurs, fill or empty each bottle as indicated using the procedures outlined in the next section.

Removing and Installing Bottles

Bottles may be removed from the auxiliary module whenever Peggy is idle. To remove or install the waste or water bottle, please use the following procedure:

IMPORTANT

Do not attempt to remove a bottle while Peggy is executing a run. This may abort the run in progress.

---

1. Remove the bottle by unscrewing it clockwise until it disengages from the manifold.
2. Pull the bottle down slowly until the sensor at the bottom of the bottle is clear.
3. Fill the water bottle up to the base of the neck or empty the waste bottle as needed.

4. To reinstall the bottle, lift it up to the manifold making sure to enclose the sensor that sits at the bottom inside the bottle. Screw the bottle counter-clockwise until the arrow on the bottle's alignment label lines up with the arrow on the manifold's alignment label.

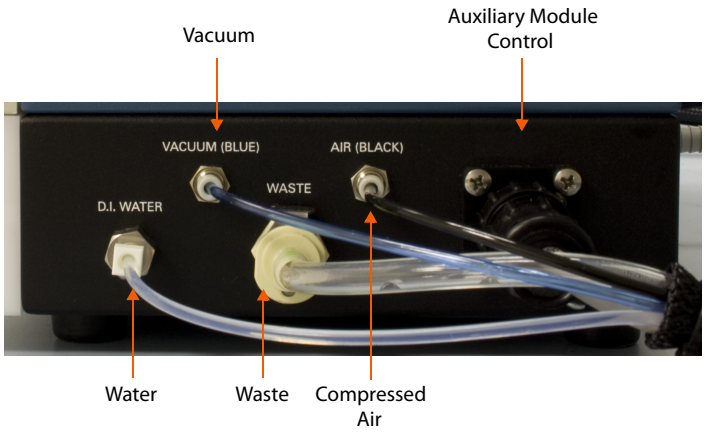
!WARNING! BIOHAZARD

Samples and waste bottle contents should be handled by procedures recommended in the CDC/NIH manual: Biosafety in Microbiological and Biomedical Laboratories (BMBL). The manual is available from the U.S. Government Printing Office or online at http://www.cdc.gov/biosafety/publications/bmbl5/.

Depending on the samples used, waste bottle contents may constitute a biohazard. Use precaution when emptying the waste bottle. Dispose of waste bottle contents in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations. Read and understand the Material Safety Data Sheets (MSDSs) provided by the manufacturers of the chemicals in the waste vial before you store, handle, or dispose of chemical waste.

Connection Panel

The auxiliary module's connector panel is located on the lower, left panel.



- **Compressed Air**: Compressed air is provided to Peggy to power pneumatic actuations. The compressed air line is black.
- **Waste:** Waste produced by Peggy is emptied into the waste reservoir. This line is under vacuum when waste aspirations are being performed.
- **Vacuum**: Vacuum is provided to Peggy for use in pick and place operations within the instrument.
- **Water**: This connection provides water to Peggy.

Compliance

Peggy complies with:

- **UL 61010-1:2001**: Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements (US)
- **EN 61010-1:2001**: Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements (EU)
- **CAN/CSA 22.2 No. 61010-1-04**: Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements (CA)
- **EN 61326-1:2006**: Electrical equipment for measurement, control and laboratory use. EMC Requirements. General requirements (EU)

Safety Guidelines

!WARNING!

If the unit is not used as specified by the manufacturer the overall safety will be impaired.

!WARNING!

If the unit is damaged and does not function properly, stop the unit safely and contact ProteinSimple Technical Support immediately.

!WARNING!

No user replaceable/serviceable parts except for the ionizer fan and separation block.

CAUTION

Avoid using Peggy in a manner not specified by ProteinSimple. While the system has been designed to protect the user, this protection may be impaired if the instrument is used improperly.

Door Interlock

A door interlock is engaged when a run is started to prevent users from opening the doors during a run. This eliminates any dangerous user interactions with the robot as well as exposure to high voltage and UV light. A yellow indicator light indicates when the instrument is running and the interlock is engaged. When the system status is Ready and the doors are open, the robot's XZ stage motors, high-voltage power supply and UV power supply are disabled.

!WARNING!

Do not override the cover interlock. The interlock protects users from exposure to UV light and a potential pinch hazard that could be caused by the moving system tray.

System Trays

CAUTION

Do not attempt to open or close any of the system trays manually. Instead, use the **Open Trays** command in the **Instrument** menu in Compass software.

Auxiliary Module Reservoirs

IMPORTANT

Do not attempt to remove water or waste reservoirs while Peggy is executing a run. This may abort the run in progress.

Waste Disposal Hazard

!WARNING! BIOHAZARD

Samples and waste bottle contents should be handled by procedures recommended in the CDC/NIH manual: Biosafety in Microbiological and Biomedical Laboratories (BMBL). The manual is available from the U.S. Government Printing Office or online at http://www.cdc.gov/biosafety/publications/bmbl5/.

Depending on the samples used, waste bottle contents may constitute a biohazard. Use precaution when emptying the waste bottle. Dispose of waste bottle contents in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

!WARNING! SHARPS HAZARD

Capillaries may present a potential sharps hazard. Dispose of used capillaries in biomedical waste sharps containers.

Physical Specifications

Description	Specification
Dimensions	0.84M H x 0.94M W x 0.61M D (2.76' H x 3.08'W x 2.00' D)
Weight	82 kg (180 lbs)
Power Requirements	100-240 VAC, 50/60 Hz, self adjusting
Power Consumption	650 W
Operating Humidity Range	20-60% relative, non-condensing
Operating Temperature Range	18-24 °C (64-75 °F)

Table 3-1: *Physical Specifications*

For indoor use only. Use up to altitudes of 1524 meters (5000 feet).

Chapter 4:

Operating Peggy

Chapter Overview

- Power Up
- Starting a Run: Size-based Assays
- Starting a Run: Charge-based Assays
- Stopping a Run
- Waste and Water Bottles
- Controlling Peggy
- Peggy's Status Modes
- Shutdown

Power Up

1. Turn on the computer connected directly to Peggy.
2. Turn on Peggy's main power switch.
3. Wait for Peggy to initialize.
4. Open Compass software.

Starting a Run: Size-based Assays

Step 1 - Get Ready

1. Open Compass software.
2. Prepare instrument: empty waste, refill water and add a new manifold sponge.
3. Create or open desired assay file.
4. Prepare assay plate following the procedure described in the product insert.

IMPORTANT
To prevent well evaporation and ensure best results, keep a lid on the assay plate until ready to use.

---

5. While plate is spinning, add Wash, Running and Matrix Removal Buffers to resource tray cups. Place capillary box in the designated resource tray position.

IMPORTANT
Capillaries are light sensitive. Keep the cover on the box until you are ready to transfer the capillary box to the resource tray.

---

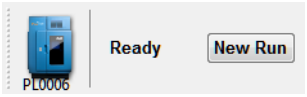
6. Place assay plate into the sample tray of the instrument and press **Start**.

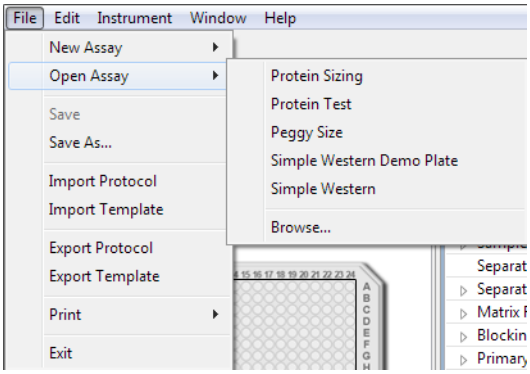
Step 2 - Start the Run

1. You can start a run in one of two ways depending on what button is displayed in the status bar.

   NEW RUN BUTTON- click **New Run**.

a.Select **File** in the main menu and click **Open Assay**.



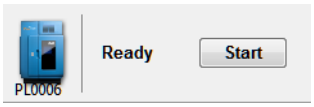


b. A list of the last five assays opened will display. Select one of these assays or click **Browse** to open the Assay folder and select a different assay.

c. Alternatively, choose **New Assay** and select **Peggy Size** to get the default Peggy assay conditions.

d. The **Start** button will display.

START BUTTON - this indicates an assay is already loaded.



a. Go to the Assay screen and verify this is the assay you want to use. If not, select **File** in the main menu, click **Open Assay**, and select another assay.

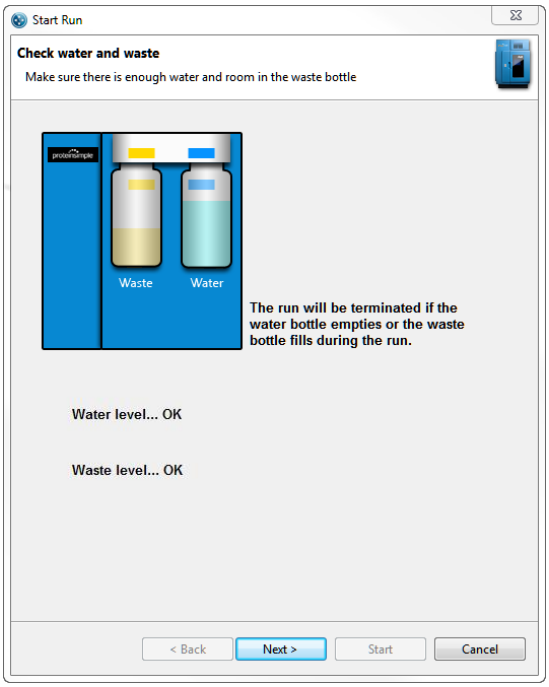
2. Click **Start**. This will launch the **Start Run Wizard**.

---

*NOTE: If the manifold was not cleaned prior to starting the run, a message indicating this will display. If this occurs, click **Yes** to cancel the run and perform the manifold cleaning.*

---

3. **Page 1: Check Water and Waste.** The fluid levels in the accessory module bottles will be checked by the software. If the levels in both bottles will allow Peggy to complete the run, the wizard screen will display **Water Level OK** and **Waste Level OK** messages. Click **Next** to proceed.

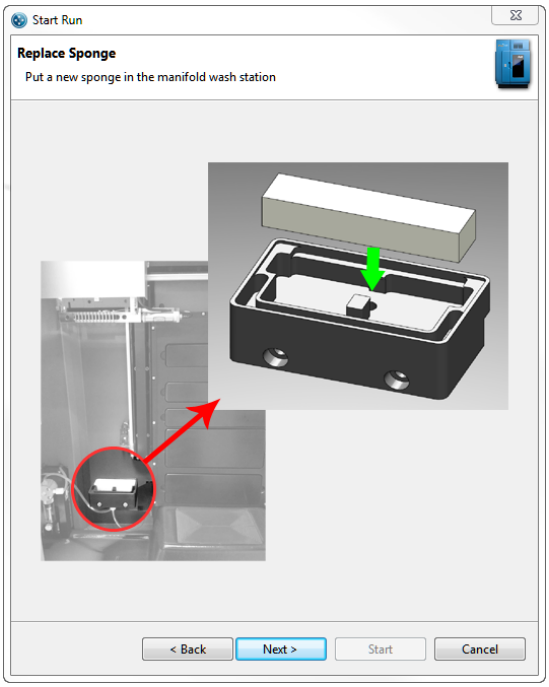

Start Run
Check water and waste
Make sure there is enough water and room in the waste bottle
Waste
Water
The run will be terminated if the water bottle empties or the waste bottle fills during the run.
Water level... OK
Waste level... OK
< Back
Next >
Start
Cancel

---

*NOTE: If the waste level is too high or the water level is too low to complete the run, messages to indicate one or both will be presented in this screen. If this occurs, fill or empty each bottle as indicated using the procedures outlined in the "Removing and Installing Bottles" on page 39. When this is complete, the error status will be automatically updated and allow the **Start Run Wizard** to proceed.*

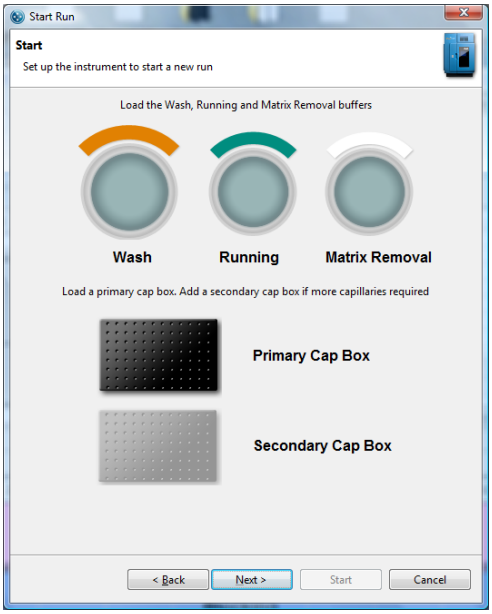
---

4. **Page 2: Replace Sponge.** A new sponge should be used each time a new experimental run is started. Discard the old sponge and put a new sponge in the manifold wash station.

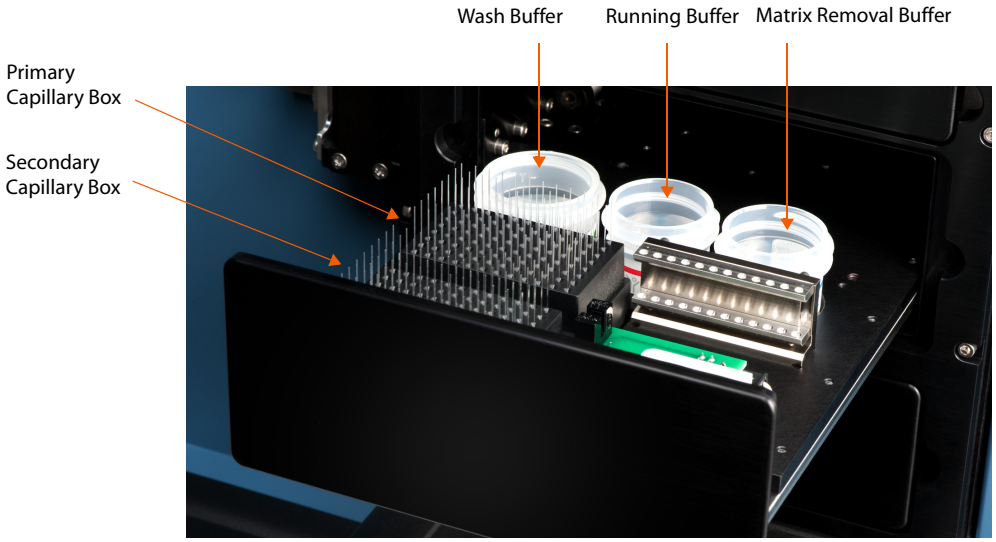


5. **Page 3: Start.** The resource tray will automatically open. Fill the Wash Buffer, Running Buffer, and Matrix Removal Buffer cups and insert the capillary box in the primary capillary box position. Add a secondary capillary box if more capillaries are required. Click **Next** when finished. The resource tray will close.

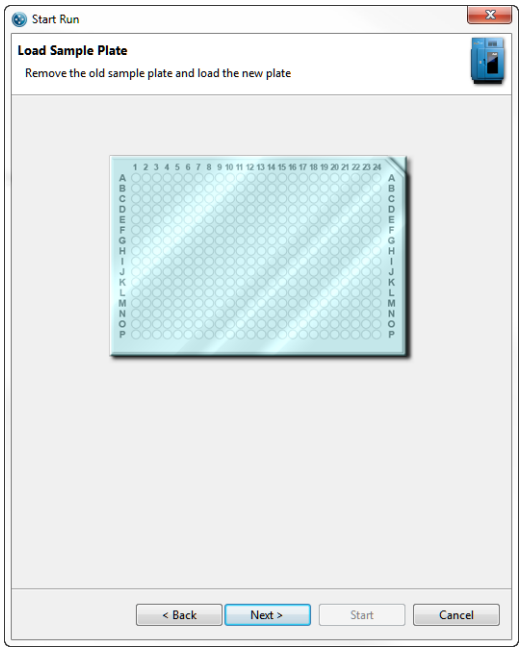
NOTE: Make sure enough capillaries are loaded to complete the run. A capillary box should be inserted in the primary position first and if additional capillaries are needed, use the secondary position. When the primary box is depleted, Peggy will automatically move to the secondary box. Discard leftover Running Buffer, Wash Buffer and Matrix Removal Buffer prior to refilling bottles for new run.

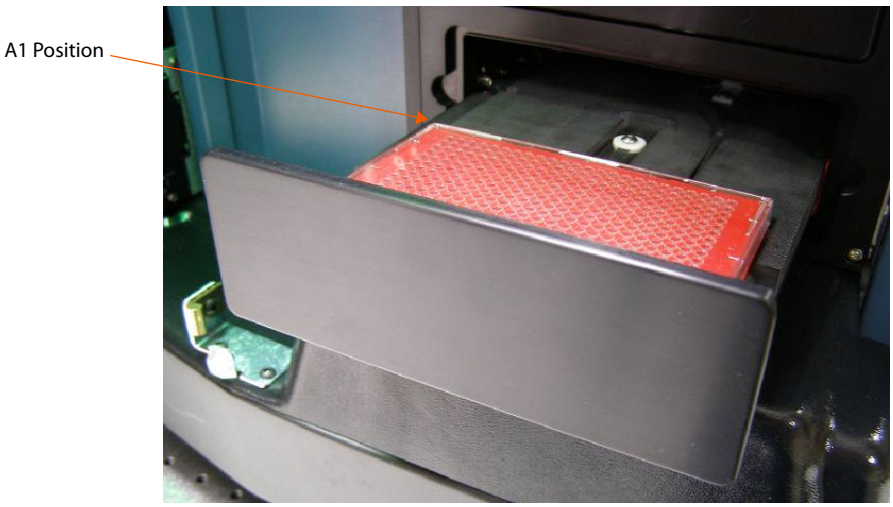


NOTE: You an also refer to the labels on the resource tray for proper insertion of reagents.



6. **Page 4: Load Sample Plate.** The sample tray will automatically open. Place the lidded 384-well plate on the cooling block in the tray, ensuring that the A1 well position is aligned with the upper left corner of the cold block. When this is complete, click **Next**. The sample tray will close.


Start Run
Load Sample Plate
Remove the old sample plate and load the new plate
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
A B C D E F G H I J K L M N O P
< Back
Next >
Start
Cancel

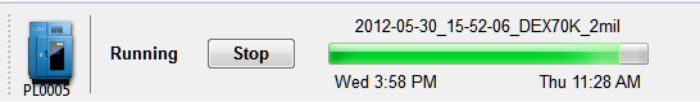


NOTES:
Peggy requires that plate lids be used on sample plates. If a lid is not detected, a message will be displayed in the Start Run Wizard. Compass software will reopen the sample tray to allow the user to insert a lid.

When inserting the sample plate, ensure that the plate is firmly seated and level on the cold block. Plates that are not level can interfere with the movement of the sample tray.

7. **Page 5: Data File.** The data file name will automatically default to the assay name appended with the current date and time. To change the file name, begin typing in the text box. To change the directory where the data file will be stored, click **Browse**:

Click **Start** to begin the run. Instrument status will change to running, and the stop button and progress bar will display:



The run will continue until complete (~14-19 hours depending on the assay).

Step 3 - Post-Run Procedures

1. Empty the capillary discard tray.
2. Remove the assay plate.
3. Dispose of the assay plate and capillaries. Disposal will depend on the samples that have been assayed. If sample origins are unknown, ProteinSimple recommends that used capillaries and plates be disposed of in biohazard waste.

!WARNING! SHARPS HAZARD

The capillaries may present a potential sharps hazard. Dispose of used capillaries in biomedical waste sharps containers.

!WARNING! BIOHAZARD

Samples and waste bottle contents should be handled by procedures recommended in the CDC/NIH manual: Biosafety in Microbiological and Biomedical Laboratories (BMBL). The manual is available from the U.S. Government Printing Office or online at http://www.cdc.gov/biosafety/publications/bmbl5/.

Depending on the samples used, waste bottle contents may constitute a biohazard. Use precaution when emptying the waste bottle. Dispose of waste bottle contents in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations. Read and understand the Material Safety Data Sheets (MSDSs) provided by the manufacturers of the chemicals in the waste vial before you store, handle, or dispose of chemical waste.

Starting a Run: Charge-based Assays

Step 1 - Get Ready

1. Open Compass software.
2. Prepare instrument: empty waste, refill water and add a new manifold sponge.
3. Create or open desired assay file.
4. Prepare assay plate following the procedure described in the product insert.

IMPORTANT
To prevent well evaporation and ensure best results, keep a lid on the assay plate until ready to use.

---

5. While plate is spinning, add Wash Buffer, Anolyte and Catholyte to resource tray cups. Place capillary box in the designated resource tray position.

IMPORTANT
Capillaries are light sensitive. Keep the cover on the box until you are ready to transfer the capillary box to the resource tray.

---

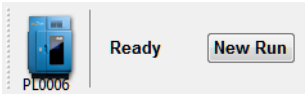
6. Place assay plate into the sample tray of the instrument and press **Start**.

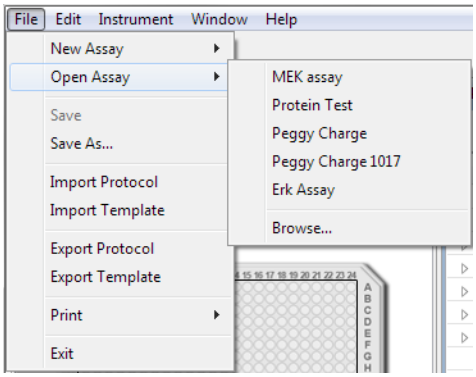
Step 2 - Start the Run

1. You can start a run in one of two ways depending on what button is displayed in the status bar.

   NEW RUN BUTTON- click **New Run**.

b.Select **File** in the main menu and click **Open Assay**.



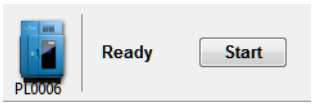


c. A list of the last five assays opened will display. Select one of these assays or click **Browse** to open the Assay folder and select a different assay.

d. Alternatively, choose **New Assay** and select **Peggy Charge** to get the default Peggy assay conditions.

e. The **Start** button will display.

START BUTTON - this indicates an assay is already loaded.



a. Go to the Assay screen and verify this is the assay you want to use. If not, select **File** in the main menu, click **Open Assay**, and select another assay.

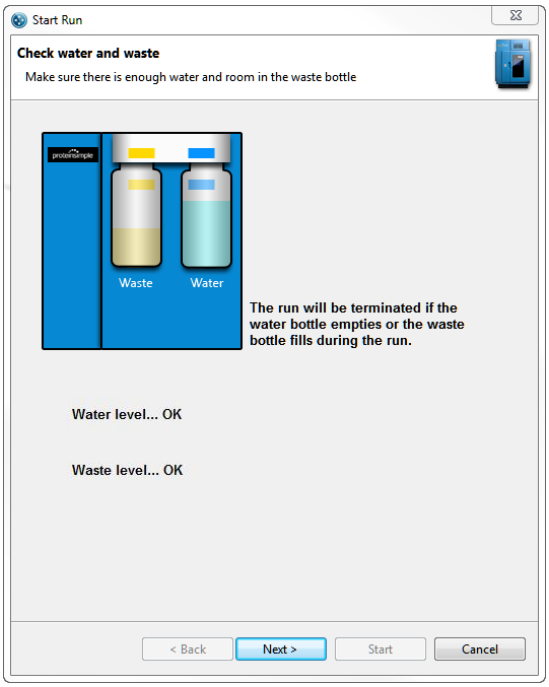
2. Click **Start**. This will launch the **Start Run Wizard**.

---

*NOTE: If the manifold was not cleaned prior to starting the run, a message indicating this will display. If this occurs, click **Yes** to cancel the run and perform the manifold cleaning.*

---

3. **Page 1: Check Water and Waste.** The fluid levels in the accessory module bottles will be checked by the software. If the levels in both bottles will allow Peggy to complete the run, the wizard screen will display **Water Level OK** and **Waste Level OK** messages. Click **Next** to proceed.

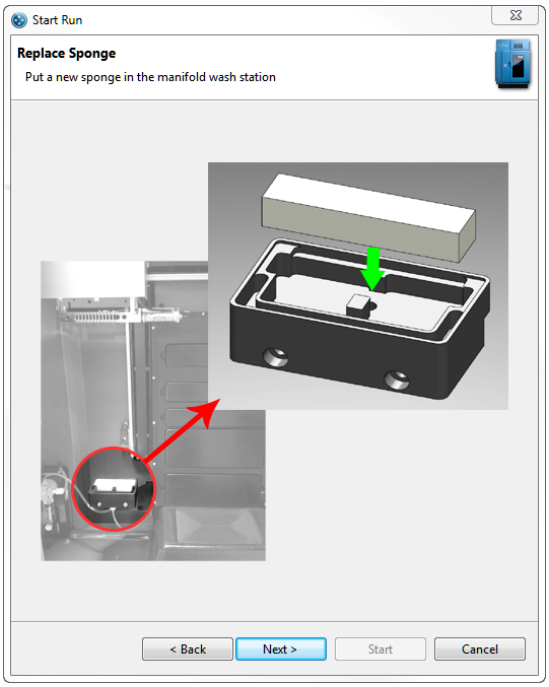

Start Run
Check water and waste
Make sure there is enough water and room in the waste bottle
Waste
Water
The run will be terminated if the water bottle empties or the waste bottle fills during the run.
Water level... OK
Waste level... OK
< Back
Next >
Start
Cancel

---

*NOTE: If the waste level is too high or the water level is too low to complete the run, messages to indicate one or both will be presented in this screen. If this occurs, fill or empty each bottle as indicated using the procedures outlined in the "Removing and Installing Bottles" on page 39. When this is complete, the error status will be automatically updated and allow the **Start Run Wizard** to proceed.*

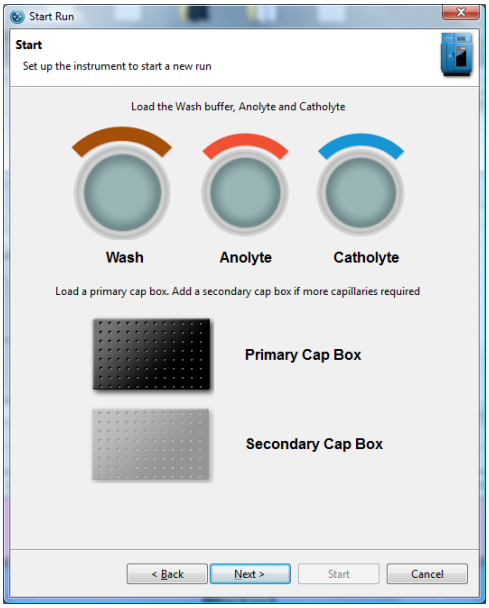
---

4. **Page 2: Replace Sponge.** A new sponge should be used each time a new experimental run is started. Discard the old sponge and put a new sponge in the manifold wash station.

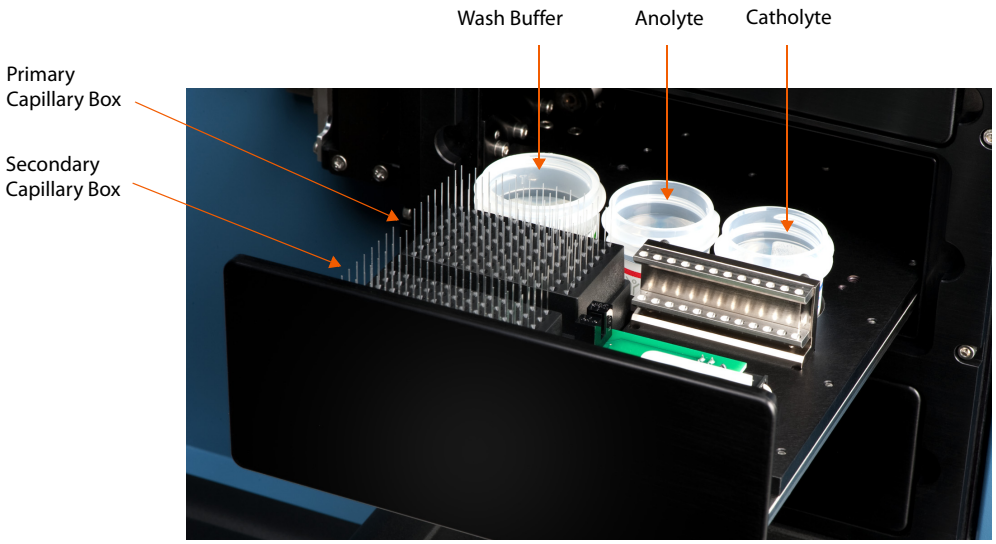


5. **Page 3: Start.** The resource tray will automatically open. Fill the Wash Buffer, Anolyte and Catholyte cups and insert the capillary box in the primary capillary box position. Add a secondary capillary box if more capillaries are required. Click **Next** when finished. The resource tray will close.

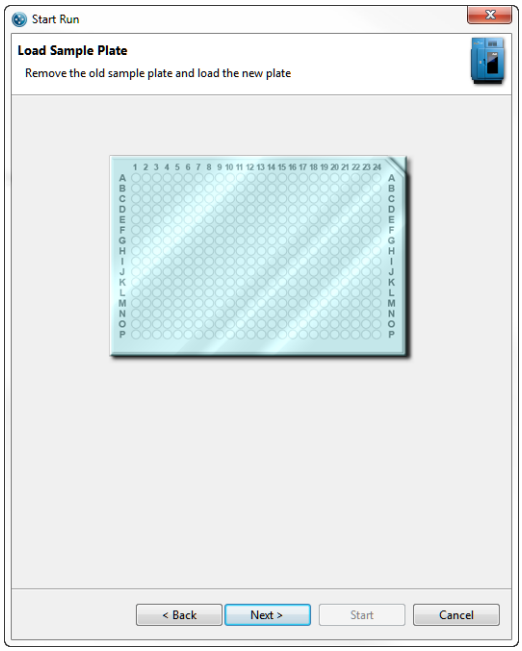
NOTE: Make sure enough capillaries are loaded to complete the run. A capillary box should be inserted in the primary position first and if additional capillaries are needed, use the secondary position. When the primary box is depleted, Peggy will automatically move to the secondary box. Discard leftover Running Buffer, Wash Buffer and Matrix Removal Buffer prior to refilling bottles for new run.

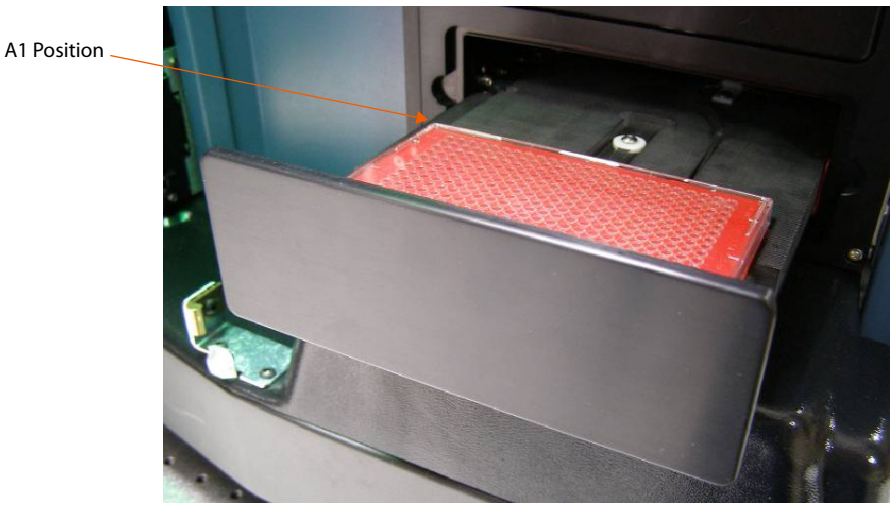


NOTE: You an also refer to the labels on the resource tray for proper insertion of reagents.



6. **Page 4: Load Sample Plate.** The sample tray will automatically open. Place the lidded 384-well plate on the cooling block in the tray, ensuring that the A1 well position is aligned with the upper left corner of the cold block. When this is complete, click **Next**. The sample tray will close.



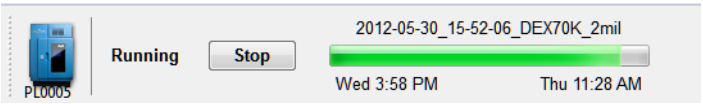


NOTES:
Peggy requires that plate lids be used on sample plates. If a lid is not detected, a message will be displayed in the Start Run Wizard. Compass software will reopen the sample tray to allow the user to insert a lid.

When inserting the sample plate, ensure that the plate is firmly seated and level on the cold block. Plates that are not level can interfere with the movement of the sample tray.

7. **Page 5: Data File.** The data file name will automatically default to the assay name appended with the current date and time. To change the file name, begin typing in the text box. To change the directory where the data file will be stored, click **Browse**:

Click **Start** to begin the run. Instrument status will change to running, and the stop button and progress bar will display:



The run will continue until complete (~14-19 hours depending on the assay).

Step 3 - Post-Run Procedures

1. Empty the capillary discard tray.
2. Remove the assay plate.
3. Dispose of the assay plate and capillaries. Disposal will depend on the samples that have been assayed. If sample origins are unknown, ProteinSimple recommends that used capillaries and plates be disposed of in biohazard waste.

!WARNING! SHARPS HAZARD

The capillaries may present a potential sharps hazard. Dispose of used capillaries in biomedical waste sharps containers.

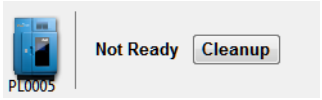
!WARNING! BIOHAZARD

Samples and waste bottle contents should be handled by procedures recommended in the CDC/NIH manual: Biosafety in Microbiological and Biomedical Laboratories (BMBL). The manual is available from the U.S. Government Printing Office or online at http://www.cdc.gov/biosafety/publications/bmbl5/.

Depending on the samples used, waste bottle contents may constitute a biohazard. Use precaution when emptying the waste bottle. Dispose of waste bottle contents in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations. Read and understand the Material Safety Data Sheets (MSDSs) provided by the manufacturers of the chemicals in the waste vial before you store, handle, or dispose of chemical waste.

Stopping a Run

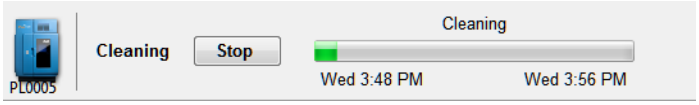
1. To stop a run, click **Stop**. When the run stops, instrument status will go to Not Ready and a Cleanup button displays:



NOTE: If a run is stopped prior to completion, Peggy must perform a cleaning protocol to remove used capillaries from system trays. This is required to prepare the system for the next run.

---

2. Click **Cleanup**.



Allow Peggy to complete the cleaning protocol which takes about ten minutes. When complete, instrument status will change to Ready and a new run can be started.

Waste and Water Bottles

The waste bottle on the Auxiliary Module should be emptied before the initiation of every new run and the water bottle refilled. To remove or install bottles:

IMPORTANT

Do not attempt to remove a bottle while Peggy is executing a run. This may abort the run in progress.

---

1. Remove the bottle by unscrewing it clockwise until it disengages from the manifold.
2. Pull the bottle down slowly until the sensor at the bottom of the bottle is clear.
3. Fill the water bottle up to the base of the neck or empty the waste bottle as needed.
4. To reinstall the bottle, lift it up to the manifold making sure to enclose the sensor that sits at the bottom inside the bottle. Screw the bottle counter-clockwise until the arrow on the bottle's alignment label lines up with the arrow on the manifold's alignment label.

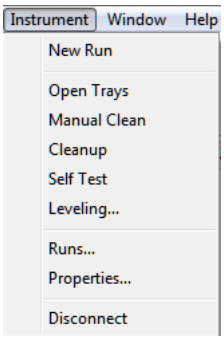
!WARNING! BIOHAZARD

Samples and waste bottle contents should be handled by procedures recommended in the CDC/NIH manual: Biosafety in Microbiological and Biomedical Laboratories (BMBL). The manual is available from the U.S. Government Printing Office or online at http://www.cdc.gov/biosafety/publications/bmbl5/.

Depending on the samples used, waste bottle contents may constitute a biohazard. Use precaution when emptying the waste bottle. Dispose of waste bottle contents in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

Controlling Peggy

The instrument menu allows users to control Peggy.



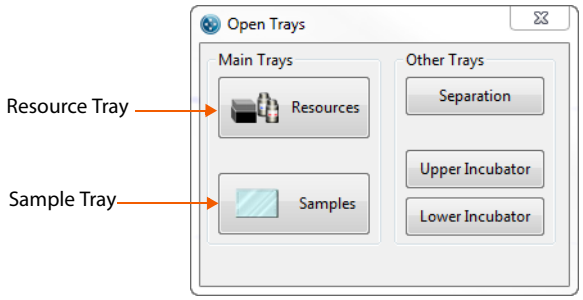
NOTE: Instrument menu options are active only when a computer with Compass software is connected directly to Peggy.

Starting a New Run

To start a new run, select **Instrument** in the main menu and click **New Run**. Then follow the steps described in "Step 2 - Start the Run" on page 46 for size assays or "Step 2 - Start the Run" on page 54 for charge assays.

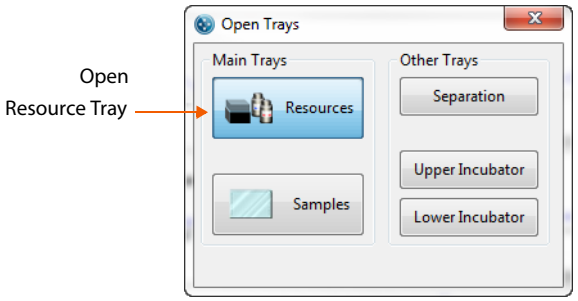
Opening Trays

To open any of the five trays, select **Instrument** and click **Open Trays**. The tray control window will appear:



Open a tray by clicking on its button. The button will become highlighted indicating the tray is open.

NOTE: Only one tray can be open at a time.

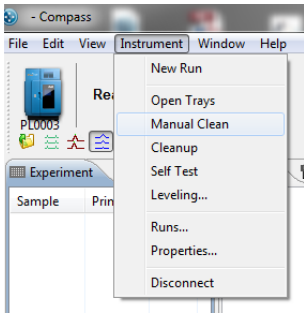


To close a tray, click the corresponding tray button again.

NOTE: If the tray control window is closed when a tray is open, the tray will close automatically.

Cleaning

Peggy's cleaning can be performed manually by the user or automatically by Compass software.



Manual Clean

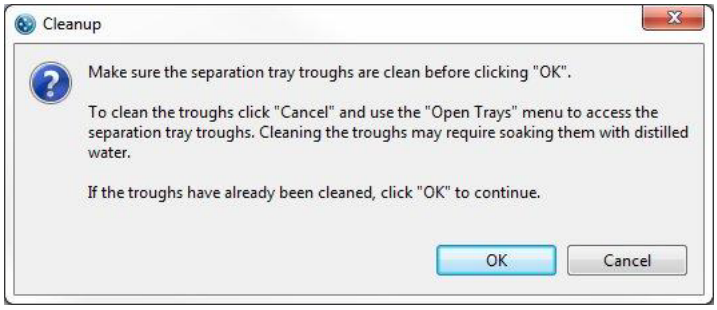
This option is used for general manual cleaning and cleaning the manifold head. To do a manual cleaning, select **Instrument** and click **Manual Clean**. The manifold head will move to a safe position for easy access and the vacuum will turn on. See "Manifold Flush" on page 75 for the manual manifold cleaning procedure.

NOTE: Please contact Protein Simple Technical Support with any questions regarding the manifold cleaning procedure.

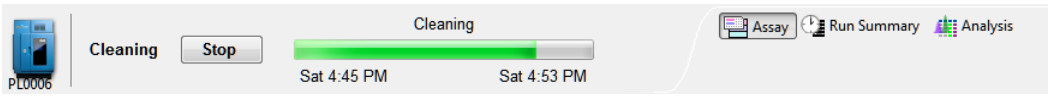
Cleanup

This option is a fully automated cleaning step. The manifold head is flushed, the separation tray troughs are aspirated and washed, and any capillaries left in the trays or gripper are picked up and discarded. This option should be selected when the instrument has not been used for more than a week or if a run error occurs. Cleaning takes about eight minutes to complete.

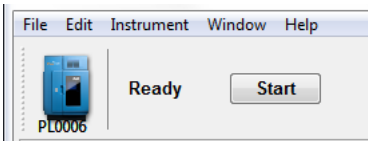
To start the protocol, select **Instrument** and click **Cleanup**. A window will appear with instructions:


Cleanup
Make sure the separation tray troughs are clean before clicking "OK".
To clean the troughs click "Cancel" and use the "Open Trays" menu to access the separation tray troughs. Cleaning the troughs may require soaking them with distilled water.
If the troughs have already been cleaned, click "OK" to continue.
OK
Cancel

Peggy's status will change to cleaning, and the stop button and the cleaning progress bar display. The **Assay** screen provides cleaning status details:



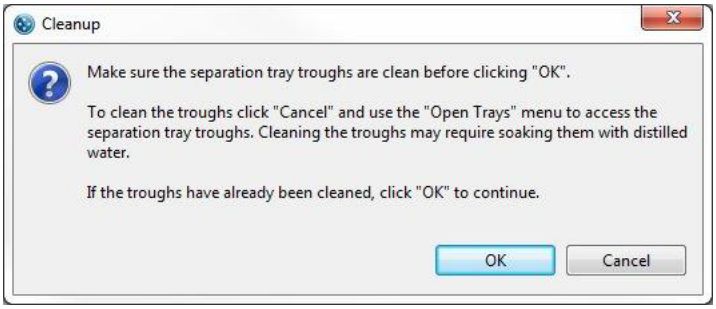
When cleaning is complete, instrument status will change to **Ready**.



Cleaning After a Run Error

Additional cleaning steps are required if an error occurs that stops the run. When this happens, the red Error status light on Peggy's front panel will come on (see "Status Lights" on page 24).

Click on the **Reset** button displayed in Compass software. The following instructions will appear:

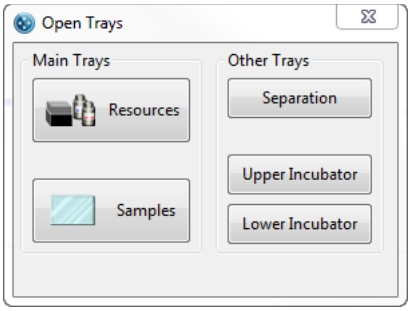

Cleanup
Make sure the separation tray troughs are clean before clicking "OK".
To clean the troughs click "Cancel" and use the "Open Trays" menu to access the separation tray troughs. Cleaning the troughs may require soaking them with distilled water.
If the troughs have already been cleaned, click "OK" to continue.
OK
Cancel

If the troughs in the separation tray are empty, click on **OK** and proceed with "Cleanup" on page 65.

If Running Buffer is present in the separation tray, click on **Cancel** and manually remove the buffer. Evaporation of the Running Buffer will result in a highly viscous residue which the automatic cleaning feature cannot remove.

To remove the Running Buffer:

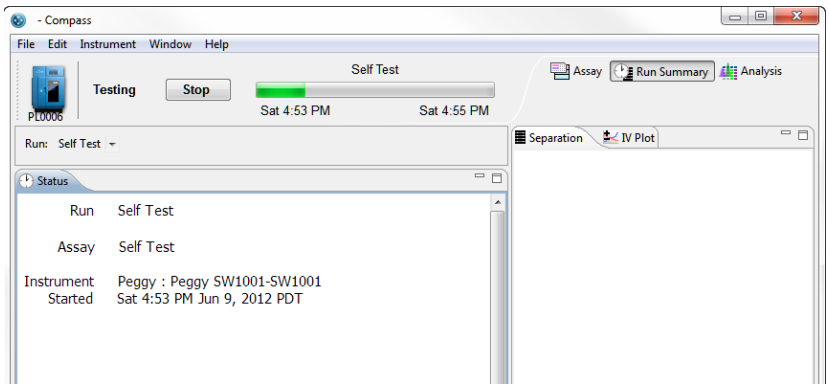
1. Select **Instrument** and click **Open Trays**.



2. Click **Separation** to open the separation tray.
3. Add 800 µL of deionized water to the troughs in the separation tray and soak for 20 minutes.
4. Remove the water by either aspirating with a pipette or with the vacuum wand located on the inside of Peggy's left door.
5. Repeat the steps above until the Running Buffer or residues are completely removed.
6. To complete the cleaning process, select **Instrument** and click **Cleanup**.

Self Test

Peggy can perform a series of self tests to check for proper instrument performance. To start the test, select **Instrument** and click **Self Test**. The test takes approximately two minutes.



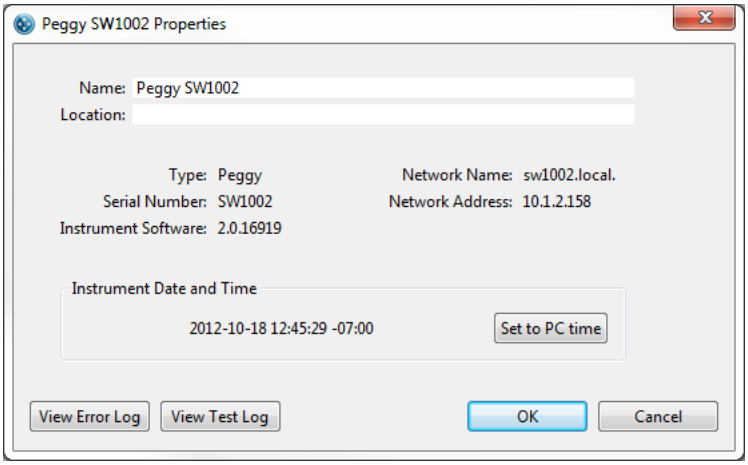
NOTE: ProteinSimple recommends performing the self test prior to starting a run.

To view the test log at completion of the test, select **Instrument**, click **Properties** and click **View Test Log**.

Viewing and Changing System Properties

Select **Instrument** and click **Properties** to display system properties which include:

- Name
- Location
- Type
- Serial number
- Instrument software version (firmware)
- Network name and address
- Date and time of the instrument clock



- **To change system name or location** - click in the name or location boxes and enter the new information.
- **To sync the instrument clock with the computer** - click **Set to PC time**.

Viewing Error and Test Logs

Select **Instrument** and click **Properties** to display system properties. To view a log, click either **View Error Log** or **View Test Log**.

Peggy's Status Modes

The instrument status bar displays status, buttons and progress bars depending on what Peggy is doing.

- **Ready/New Run button** - Peggy is ready but an assay is not loaded. Click **New Run** to open an assay.

- **Ready/Start button** - Peggy is ready and an assay is loaded. Click **Start** to begin a run.
- **Not Ready/Clean button** - Peggy is not ready and must perform system cleaning. Click **Clean** to start the cleaning protocol.
- **Not Ready/Reset button** - Peggy is not ready and must reinitialize. Click **Reset** to start the initialization protocol.
- **Running/Stop button** - Peggy is running an assay. The run name, time the run started and when it will complete display in the run progress bar. Click **Stop** to stop the run.
- **Cleaning/button not active** - Peggy is running a cleaning protocol. The time the cleaning protocol started and when it will complete display in the run progress bar.
- **Error/Reset button** - An error has occurred. Go to the **Status** window in the **Run Summary** screen to view details. When the source of the error is corrected, click **Reset**.

Shutdown

1. Close Compass software and shut down the system computer.
2. The instrument can remain on unless it will not be used for an extended period.

Chapter 5:

Maintenance and Troubleshooting

Chapter Overview

- Software Updates
- Maintenance
- Preparation for Storage or Shipment
- Spare Parts
- Troubleshooting

Software Updates

To check for software updates, go to Compass software, select **Help** in the main menu and click **Check for Updates**.

Maintenance

Daily

Empty the Capillary Discard Tray

Empty the capillary discard tray on a daily basis after each run. The discard tray is located under Peggy's system tray.

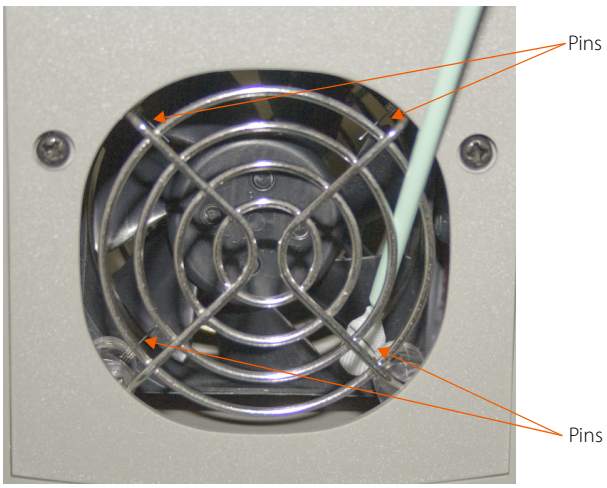
Monthly

Ionizer Cleaning

Items needed: Isopropyl alcohol, cleaning swab (lint and fiber-free, VWR P/N 89133-806) and the screwdriver (P/N 040-994) provided in the Peggy accessory kit.

1. Open Peggy's right door to gain access to the ionizing fans.
2. Remove the thumbscrew holding the protective cover over the fans.

3. Using the cleaning swab, rub isopropyl alcohol over each of the 4 ionizing pins on the fan to remove any build-up.



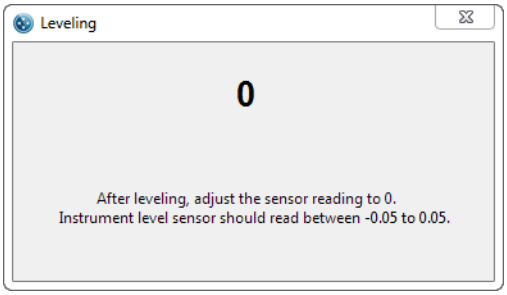
4. Replace the panel and captive screw.

Yearly

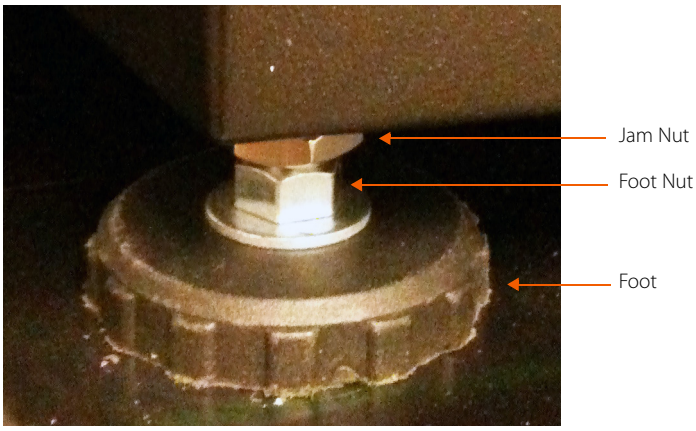
ProteinSimple recommends that an annual preventive maintenance visit be performed by an authorized ProteinSimple representative. Please contact Customer Support to schedule a visit.

Leveling the Instrument

This option allows the user to see if Peggy is properly leveled. Select **Instrument** and click **Leveling** to access this option. The following screen displays the level status of the instrument:



NOTE: If the reading is not between -0.05 and 0.05, the instrument will need to be leveled. Follow the instructions below or consult ProteinSimple Technical Support or your Customer Service Engineer to assist you in properly leveling the instrument.



1. Loosen the jam nut (11/16") on both front feet.

2. Adjust the foot nut (1/2") on both front feet with a wrench until the level indicates 0 (+/- 0.05).

NOTE: Turning the wrench clockwise will raise the front and make the sensor read more negative.

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3. Once level, lock the position by holding the foot nut in place with the wrench and tightening the jam nut by hand.

Instrument Cleaning

Instrument cleaning can be performed automatically. See "Cleaning" on page 64.

Manifold Flush

Items needed: 5% Contrad solution, 0.22-micron filtered deionized water (molecular biology grade or better), 50-mL disposable syringe, 1-mm syringe tip and paper towels.

1. Select **Manual Clean** from the **Instrument** menu in Compass software. This will position the manifold for easy access and turn on the vacuum.
2. Fill the 50-mL disposable syringe with 5% Contrad solution. Place the 1-mm tip on the syringe.
3. Flush each hole located on the bottom of the manifold. Position the syringe tip into the first hole and inject 15 mL of the 5% Contrad solution. Repeat for each manifold hole.

4. Repeat step 3 with water.
5. When all flush steps are complete, click **OK**.

NOTE: Please contact Protein Simple Technical Support with any questions regarding the manifold cleaning procedure.

System Decontamination

The following decontamination procedures should be performed after analysis of hazardous samples on Peggy.

Prior to Hazardous Sample Analysis

The following procedure should be performed to prepare Peggy for hazardous sample analysis:

Items needed: 10% bleach solution

1. Remove and empty the waste bottle.
2. Add 10% bleach solution to the bottle until the liquid level is 1 cm from the bottom of the bottle.
3. Reinstall the waste bottle.

Post-Run Decontamination

When running hazardous samples, perform the following procedures monthly at minimum, or as often as needed based on the type of samples being run. This procedure should also be followed prior to system shipment.

Items needed: 10% bleach solution, 5% Contrad solution, 0.22-micron filtered deionized water (molecular biology grade or better), 50-mL disposable syringe, 1-mm syringe tip, rubber gloves and paper towels.

1. Perform the **Wipe Down** procedure (see below).
2. Perform the **Internal Instrument Cleaning** procedure (see below).
3. Perform the **Waste Stream Cleaning** procedure (see below).

Wipe Down Procedure

Items needed: 10% bleach solution and towels

NOTE: Wear rubber gloves for the wipe down procedure.

1. Completely saturate a towel with 10% bleach solution.
2. Wipe down the exterior of the instrument.

3. In Compass software, select **Instrument** in the main menu and click **Open Trays**, selecting the **Separation Tray** to extend the system tray. Wipe down all accessible areas paying particular attention to:
   a. The upper and lower levels of the capillary box racks in the resource tray.
   b. The underside of the wash station in the resource tray.
   c. Close all trays.

Internal Instrument Cleaning Procedure

1. Empty and rinse the Running, Wash and Matrix Removal Buffer cups.
2. Fill each cup with 10% bleach solution and insert into the resource tray.

Waste Stream Cleaning Procedure

1. Select **Manual Clean** from the **Instrument** menu in Compass software. This will position the manifold for easy access and turn on the vacuum.
2. Fill the 50-mL disposable syringe with 10% bleach solution. Place the 1-mm tip on the syringe.
3. Flush each hole located on the bottom of the manifold. Refer to the picture in "Manifold Flush" on page 75 for proper insertion of the syringe, then position the syringe tip into the first hole and inject 15 mL of the 10% bleach solution. Repeat for each manifold hole.
4. Repeat step 3 with 5% Contrad solution.
5. Repeat step 3 with water.
6. When all flush steps are complete, click **OK**.

NOTE: Please contact Protein Simple Technical Support with any questions regarding the manifold cleaning procedure.

Preparation for Storage or Shipment

Storage

ProteinSimple recommends storing the instrument if it will not be used for two weeks or longer. To prepare the system for storage:

1. Open the resource tray and remove any remaining capillaries along with the Wash, Running and Matrix Removal Buffer cups. Discard any unused wash, running and matrix removal buffers. Rinse the bottles with 0.22-micron filtered deionized water (molecular biology grade or better) and let air dry. When dry, cap and store at room temperature.

NOTE: Failure to remove and cap reagents may lead to evaporation and unnecessary concentration of reagents which will affect assay performance.

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2. Open the sample tray and remove the sample plate.

NOTE: Regardless of reagent levels, replace all assay reagents with fresh solutions every 24 hours.

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3. If hazardous samples have been analyzed on Peggy, perform the "Post-Run Decontamination" on page 76 procedure.
4. Empty the waste bottle and reinstall.

Shipment Preparation

To prepare Peggy for shipment:

1. Perform "Instrument Cleaning" on page 75.
2. Perform "Post-Run Decontamination" on page 76.
3. Empty the waste bottle and reinstall.

Spare Parts

For assistance with replacement parts, please contact ProteinSimple Technical Support at (888) 607-9692.

Description	Part Number
Auxiliary Module Waste Bottle	002-611
Wrench, Combination, 1/2" - 5/8", Open End	040-992
Wrench, Driver, Allen M2.5	040-993
Peggy Instrument Cup Set (3)	041-595
Waste/Water bottle replacement kit	040-710

Troubleshooting

For instrument and assay troubleshooting information, please contact ProteinSimple Technical Support at (888) 607-9692 (option 3), support@proteinsimple.com or visit http://www.proteinsimple.com/technical_-support.html.